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PRE-APPEAL BRIEF REQUEST FOR REVIEW

Docket Number (Optional)

20496-499

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Signature _____

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name _____

Application Number

10/560,977

Filed

August 16, 2006

First Named Inventor

Heinz Sibum

Art Unit

1793

Examiner

Caitlin Anne Fogarty

Applicant requests review of the final rejection in the above-identified application. No amendments are being filed with this request.

This request is being filed with a notice of appeal.

The review is requested for the reason(s) stated on the attached sheet(s).

Note: No more than five (5) pages may be provided.

I am the

☐

applicant/inventor.

☐

assignee of record of the entire interest.

See 37 CFR 3.71. Statement under 37 CFR 3.73(b) is enclosed.
(Form PTO/SB/96)

☒

attorney or agent of record.

Registration number 55,699

☐

attorney or agent acting under 37 CFR 1.34.

Registration number if acting under 37 CFR 1.34 _____


Signature

Deborah M. Vernon

Typed or printed name

617-526-9836

Telephone number

November 23, 2009

Date

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required.
Submit multiple forms if more than one signature is required, see below*.

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*Total of 1 forms are submitted.

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANTS:	Heinz Sibum, et al.	CONFIRMATION NO.:	9590
SERIAL NO.:	10/560,977	GROUP NO.:	1793
FILING DATE:	August 16, 2006	EXAMINER:	Caitlin Anne Fogarty
TITLE:	Beta-titanium alloy, method for the production of a hot-rolled product from an alloy of this type, and uses thereof		

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

PRE-APPEAL BRIEF REQUEST FOR REVIEW

Applicants respectfully request review of the Final Office Action mailed May 21, 2009 in connection with the above-identified application. A Response to Final Office Action together with a petition for a three-month extension of time and corresponding fee was submitted on November 9, 2009, for which Applicants have not received any further action or Notice of Allowance. Applicants hereby file this Request concurrently with a Notice of Appeal on Monday, November 23, 2009, which is within the time period permitted by virtue of Applicants' petition for a three-month extension of time filed on November 9, 2009. No amendments are being filed with this Request. The review is requested for reasons provided herein.

Applicants hereby authorize the Commissioner to charge any fee that may be due in this application to Attorney's Deposit Account No. 50-3081.

Applicants respectfully request entry of this request, in which:

- **Remarks** begin on page 2.

REMARKS

In the final Office Action mailed May 21, 2009, the Examiner issued a restriction requirement between the composition claims (claims 1, 2, 4-9, and 18) and the process claims (claims 10-17). The Examiner also rejected claims 1, 2, 4-9, and 18 under 35 U.S.C. § 103 as being unpatentable in view of U.S. Patent 3,615,378 to Bomberger et al. ("Bomberger").

Applicants note that claims 1 and 2 are written in independent form. Claims 4-18 depend directly or indirectly from claim 1 or 2. For at least the reasons presented in the Response filed November 9, 2009 and restated below, Applicants respectfully submit that the Examiner made a clear mistake in issuing the restriction requirement, and has failed to establish a proper rejection under 35 U.S.C. § 103(a).

I. The Final Office Action Contains A Legal Mistake in Issuing the Restriction Requirement

In the Response filed November 9, 2009, Applicants traversed the restriction requirement because the Examiner has applied the wrong set of rules (35 U.S.C. § 121 and 37 CFR § 1.141-1.146, see Office Action at pp. 2-4). As explained on p. 2 of the Response, because the instant application is a U.S. national phase application under 35 U.S.C. § 371, the applicable rules should have been PCT Rule 13, unity of invention rather than 37 CFR § 1.141-146. Therefore, the Examiner has made a clear legal mistake by using the wrong rules to impose the restriction requirement. Accordingly, Applicants respectfully submit that the restriction requirement is improper and request withdrawal of this requirement.

Furthermore, the claimed invention fulfills the PCT Rule 13, unity of invention requirement because the technical relationship between Group I (claims 1, 2, 4-9, and 18) and Group II (claims 10-17) involves the same special technical features. Specifically, method claim 10 is dependent upon composition claim 1 or 2 and thus includes all limitations of claim 1 or 2. For example, the method of claim 10 is linked to the composition of claim 1 or 2, in that the method of manufacturing includes melting a beta titanium melt having the composition of claim 1 or 2. Further, independent claims 1 and 2 are novel over the prior art for reasons appearing on pp. 3-8 of the Response filed on November 9, 2009 and repeated below. Therefore, unity of invention exists under PCT Rule 13.

For at least these reasons, Applicants respectfully submit that the restriction between Group I and Group II is improper, and should be withdrawn.

II. The Final Office Action Fails To Establish A *Prima Facie* Case Of Obviousness Under 35 U.S.C. § 103(a)

The Final Office Action fails to support a *prima facie* case of obviousness because not only does Bomberger fail to teach or suggest all of the elements of Applicants' independent claims 1 and 2, but also the Examiner's proposed modification is discouraged by the disclosure of Bomberger and would render the resulting alloy unsuitable for Bomberger's intended purpose.

Claims 1 and 2 are directed to a beta titanium alloy containing elements in specified mass percentages, including 13-17% vanadium in mass percent. The high vanadium content is important because it stabilizes the beta phase of the structure and increases the high temperature strength of the alloy. See p. 2, l. 26 to p. 3, l. 27 of the English Translation of the application as originally-filed. By contrast, Bomberger only considers titanium alloy composition in atomic percentage without disclosing any mass percentage, as Bomberger is focused on the valence electron density ("VED") of the titanium alloy which is determined by the atomic percentages of the alloy elements¹. See Bomberger at col. 3, ll. 9-11 and ll. 31-34. For example, Bomberger's vanadium element is 4-9% in atomic percent rather than 13-17% in mass percent claimed by Applicants. See Bomberger at col. 4, l. 9 and col. 5, l. 21. One skilled in the art will appreciate that given the atomic mass of vanadium (50.942; titanium is 47.867), 4-9% in atomic percent, even if converted to mass percent², would likely be significantly lower than 13-17% in mass percent.

This point is further supported by converting all of Bomberger's embodiments shown in Tables 1-3 from atomic to mass percent. (See Appendix A of the Response filed November 9, 2009, for the calculation.) The converted mass percentages (i.e., weight %) clearly show that Bomberger's alloy compositions are different than instantly claimed. In particular, Bomberger's vanadium content is 1.97-8.06% which does not overlap with Applicants' 13-17%. For example, the highest vanadium mass percentage disclosed by Bomberger is 8.06% in Table 1 Alloy 11, which

¹ VED = 0.04(%Ti+Zr+Sn)+0.07(%Mn)+0.06(%Cr+%Mo)+0.08(%Fe)+0.09(%Co)+0.05(%V+%Cb+%Ta)+0.03(%Al). % is in atomic percentages. See Bomberger at col. 3, ll. 31-34 and Certificate of Correction.

² Converting atomic to mass percent requires knowing the alloy composition and the content of all alloy elements. $M_A = a_A X_A / (a_A X_A + a_B X_B + \dots)$, where M_A is the mass % of element A, a_A, a_B, \dots is the atomic mass of element A, B, ... and X_A, X_B, \dots is the atom % of element A, B, ...

is substantially lower than the lowest vanadium percentage, 13% claimed by Applicants. Therefore, the composition of the beta titanium alloy of Bomberger does not overlap with the composition of Applicants' claimed beta titanium alloy, belying the Examiner's allegation.

Moreover, modifying the composition of Bomberger is discouraged by Bomberger. Bomberger's objectives are "to retain an all-beta structure at room temperature" and to achieve desired "hardness or tensile strength." Bomberger at col. 3, ll. 9-11 and col. 4, ll. 34-37. According to Bomberger, "a necessary condition" is a certain range of VED value of the titanium alloy. *Id.* Specifically, Bomberger requires that "[o]ur alloy has a VED of 4.15 to 4.35, which we regard as critical as demonstrated hereinafter by actual examples." Bomberger at col. 3, ll. 35-36. To obtain the desired VED values, Bomberger discloses in Tables 1-3 alloy compositions where the vanadium component is less than 8.1% (i.e., Table 1 Alloy 3) in atomic percent (8.04% in mass percent, see Appendix A of the Response filed November 9, 2009). With 8.1% vanadium, Table 1 Alloy 3 has a VED of 4.35, which is regarded by Bomberger to "fall outside our invention." See Bomberger at col. 4, ll. 30-32. Because vanadium has 5 valence electrons, one of ordinary skills in the art would understand that increasing vanadium content above 8.1% would further increase the VED value over 4.35, which is undesirable according to Bomberger. Therefore, Bomberger discourages increasing vanadium content beyond 8.1% in atomic percent (8.04% in mass percent).

Applicants respectfully submit that if the vanadium content of Bomberger's alloy were modified and increased to 13-17% as claimed by Applicants, the corresponding VED would be greater than 4.35, thereby making the modified titanium alloy unsuitable for Bomberger's intended purpose. That is, according to Bomberger a titanium alloy having a VED of greater than 4.35 would result in a situation where "aging produces no significant increase in their hardness or tensile strength." Bomberger at col. 4, ll. 34-37. For example, after heat treatment, alloys having a VED at or above 4.35 (Alloy 2 and 3) do not show desirable increase in hardness (Alloy 2 changes from 67 HRA to 68 HRA and Alloy 3 from 65 HRA to 64 HRA) and no increase in tensile strength. See Bomberger at Table 1. These alloys are unsuitable because Bomberger specifically requires: "The alloy should respond to heat treatment and achieve ... with useful toughness and ductility..., which properties it should retain after prolonged exposure to temperatures up to 600 °F." See Bomberger at col. 1, ll. 20-25. As the modification of Bomberger's disclosed composition would result in an alloy unsuitable for Bomberger's intended purposes (e.g., desired hardness or tensile strength),

Applicants respectfully submit that a person of ordinary skill in the art would not have modified Bomberger's composition to the alloy composition as claimed by Applicants. See MPEP § 2143.01, which states "If [the] proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification."

In view of the above, Applicants respectfully submit that the Examiner fails to establish a *prima facie* case of obviousness because Bomberger fails to teach or suggest each and every element of claims 1 and 2 (i.e., the claimed vanadium content). In addition, claims 1 and 2 are patentable over Bomberger because a person of ordinary skill in the art at the time the invention was made would not be motivated to modify (i.e., increase) Bomberger's disclosed vanadium content. Accordingly, Applicants respectfully request that the rejection of claims 1 and 2 under 35 U.S.C. § 103(a) be reconsidered and withdrawn. Applicants also respectfully submit that claims 4-9 and 18 are allowable because they depend upon allowable base claim 1 or 2.

CONCLUSION

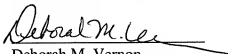
For at least the foregoing reasons, Applicants respectfully submit that the Examiner made a clear legal mistake in issuing the restriction requirement in the Final Office Action, and has failed to establish a proper rejection under 35 U.S.C. § 103(a). Applicants respectfully request that the restriction requirement and all rejections be withdrawn. All pending claims are in condition for allowance and early favorable action is respectfully requested.

Should the Examiner find that there are any issues outstanding after consideration of this Request, the Examiner is welcome to contact Applicants' Attorney at the number below to expedite prosecution of the application. All fees required to enter this Request may be charged to Attorney Deposit Account No. 50-3081.

Respectfully submitted,

Date: November 23, 2009
Reg. No.: 55,699

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